The Common Muscoid Flies, Occurring About Sweet-Shops in Yokohama, Japan.

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Stationed in Yokohama during June and July, 1923, I was interested in the swarms of flies congregated in shops where various sweets, wines, etc., were exposed for sale. In such places an attempt was being made to check these pests, using a most ingenious fly-trap. Finding that I could get quantities of specimens so easily, I decided to make a census of the comparative abundance of the species thus attracted to sweets.

From five traps, June 28 I got 163 flies. These were each examined with a lens, and separated into the following species:

		Per cent
Lucilia caesar (Linn.)	76	47.0
Calliphora lata Coq.	35	21.5
Muscina stabulans (Fall.)	24	15.0
Fannia scalaris (Fabr.)	15	9.0
Sarcophaga fuscicauda Bötteh.	5	3.0
Lucilia sericata (Meigen)	4	2.5
Fannia canicularis (Linn.)	2	1.0
Musca convexifrons Thoms.	1	.5
Ophyra nigra (Weidemann)	1	.5
	163	100.0

It is interesting to note that not a single house-fly, *Musca domestica,* was taken in the above lot of flies. Indeed, I found this species remarkably scarce, even later in the summer, when other flies were very prolific. This is probably accounted for by the lack of favorable facilities for breeding. As is well known, Japanese cities have very few draught animals. Furthermore, even the little available manure from these creatures is at once put into maceration tanks, together with human excrement and other organic matter. In the treatment of this fertilizer material, it is so saturated that *domestica* has apparently not yet become sufficiently adapted to live in it. All of the other species listed above, however, I was able to breed out under such

conditions. They apparently live happily, side by side, in such a foul-smelling semiliquid, fermenting mass.

A month later, July 28, all of these species of flies had become increasingly abundant. Going over the 5250 taken from the traps, I got the following records:

		Per cent
Calliphora lata Coq.	1765	33.62
Sarcophaga (mostly *fuscicauda* Böttch.)	1156	22.00
Lucilia caesar (Linn.)	809	15.40
Lucilia sericata (Meigen)	752	14.34
Muscina stabulans (Fall.)	283	5.38
Fannia scalaris (Fabr.)	256	4.88
Musca domestica Linn.	122	2.33
Fannia canicularis (Linn.)	72	1.37
Ophyra nigra (Weid.)	13	.25
Chrysomyia megacephala (Fabr.)	4	.08
Anthomyia bisetosa Thoms.	3	.06
Musca convexifrons Thoms.	2	.04
Chrysomyia sp. n.	1	.02
Miscellaneous small flies	12	.23
	5250	100.00

The above data goes to show that the danger to public health from such flies can hardly be overestimated. Breeding as they do in the Orient, under the most filthy conditions, frequently contaminated by disease germs of typhoid, etc., in human excrement, they come straight to the food of man. Of course it is well known that, in feeding, these flies must first liquefy the food before they can take it into their bodies. Watching a fly feeding on a dry piece of sugar or candy, one gets a vivid illustration of this. It first regurgitates a drop of contaminated liquid from its crop, which, by the way, is located away down in its abdomen. This liquid is at once applied to the dry surface of the sugar and rubbed about vigorously with the rasplike flabellum on the end of the fly's proboscis. The solution is then sucked in and forced out several times in a churning process before it is finally swallowed. Inevitably a part of the contaminated, germ-laden liquid is left on the surface of the sugar. Likewise, the same process takes place when we see the flies feeding at the corners of the sticky mouths of children. Hence it is not difficult to understand the tremendous mortality, especially among the young, in summer in the Orient.